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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,423	11/21/2003	Eric R. Hansen	204560-73806	3387
7590	06/15/2005			
			EXAMINER	
			LU, JIPING	
			ART UNIT	PAPER NUMBER
			3749	
DATE MAILED: 06/15/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/719,423	HANSEN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jiping Lu	3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 09 May 2005.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-29 and 31-34 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-29 and 31-34 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 14, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Iken et al (U. S. Pat. 3,488,700).

Iken shows a method of operating a mineral process kiln having inclined rotary kiln. Combustion air and fuel is introduced at the lower end of the rotary kiln (insufficient for complete combustion or at sub-stoichiometric combustion condition). Additional combustion air 7 is introduced (at 9) into the kiln between the upper and lower ends of the kiln for complete combustion or excess air combustion or super-stoichiometric combustion same as the applicant's.

3. Claims 19, 21, 23-28, 31-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Branvold (U.S.Pat. 3,584,850).

Brandvold shows a mineral lime (CaO) processing inclined rotary kiln 12 with a lower combustion air end 14b and an upper material feed end 14a, 18, 20d. An air inlet opening 24e is located between two ends. A preheater or precalcining assembly 38, 40 (incoming mineral passes inlet chute 20d and is directly preheated by the exiting hot flue gas 44 in vessel 38) is positioned proximate to the upper end 18. The preheating or precalcining assembly has a stationary vessel 38, 40 through which the mineral passes prior to advancement into the rotary vessel. The kiln existing hot flue gas stream passes in contact with the mineral subsequent to

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advancement out of the rotary vessel. A stationary hood 14k is positioned proximate to the combustion air inlet lower end 14b and a burner 16a is proximate to the combustion air inlet lower end 14b. For claim 31, a mineral feed assembly 22a is operable to heat lime mineral and thereafter advance the lime mineral into the upper end of the rotary vessel 18. It is noted that the incoming mineral passes inlet chute 20d and is indirectly heated by the exiting hot flue gas 28 in vessel 22a.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-13, 15-17, 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iken et al (U. S. Pat. 3,488,700) in view of Brandvold (U. S. Pat. 3,584,850)

Iken shows a method of operating a mineral process kiln having inclined rotary kiln. Combustion air and fuel is introduced at the lower end of the rotary kiln (insufficient for complete combustion or at sub-stoichiometric combustion condition). Additional combustion air 7 is introduced (at 9) into the kiln between the upper and lower ends of the kiln for complete combustion or excess air combustion or upper-stoichiometric combustion same as the applicant's. Brandvold shows a mineral lime (CaO) processing inclined rotary kiln 12 with a lower combustion air end 14b and an upper material feed end 14a, 18, 20d. A combustion air inlet opening 24e is located between two ends. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the rotary kiln 1 of Iken with a secondary combustion air or excessive combustion air supply on the wall of the kiln

1 between two kiln ends as taught by Brandvold in order to provide more direct supply of excessive combustion air. With regard to claimed numerical ranges of the combustion air mass flow rate, it would have been an obvious matter of design choice to supply the combustion air at any desired mass flow rate in order to obtain the optimum result since applicant has not disclosed that the claimed combustion air mass flow rate range solves any stated problem in a new or unexpected way or is for any particular purpose which is unobvious to one of ordinary skill in the art .

7. Claims 19, 21-28, 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tutt et al (U. S. Pat. 5,375,535) in view of Herchenbach et al (U.S. Pat. 4,329,180).

Tutt shows a mineral lime (CaO) processing inclined rotary kiln 16 with a lower combustion air end 36 and an upper material feed end 12, 20. An air inlet opening 56-60 is located between two ends. A preheater or precalcining assembly (at 20, 22 by indirect heat exchange between hot flue gas 40 and incoming mineral 20) is positioned proximate to the upper end 16 prior to the rotary vessel 24, 28. A stationary hood 32 is positioned proximate to the combustion air inlet lower end 28 and a burner 33 is proximate to the combustion air inlet lower end 34. For claim 31, a mineral feed assembly 20 is operable to heat lime mineral and thereafter advance the lime mineral into the upper end of the rotary vessel 16, 24. It is noted that the incoming mineral 20 passes inlet chute 12 and is indirectly heated by the exiting hot flue gas 40, 42, 22 which serves the same function as claimed , e.g. recovery of waste heat common and well known in the art. However, Tutt does not show a preheater or precalcining assembly with direct heat exchange for waste heat recovery. Herchenbach et al show a preheater or precalcining assembly 18-29 with direct heat exchange for waste heat recovery. The preheating or

precalcining assembly 18-29 has a stationary vessel 19 through which the mineral passes prior to advancement into the rotary vessel 10. The kiln existing hot flue gas stream (at 16) passes in contact with the mineral subsequent to advancement out of the rotary vessel 10. This is a well known in the art to use direct heat exchange relationship. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the preheating or calcining assembly 18-29 with direct heat exchanger of Herchbench et al for the preheater or calcining assembly 20, 22 of Tutt in order to obtain a more efficient waste heat recovery. With regard to claimed numerical ranges of the combustion air mass flow rate, it would have been an obvious matter of design choice to supply the combustion air at any desired mass flow rate in order to obtain the optimum result since applicant has not disclosed that the claimed combustion air mass flow rate range solves any stated problem in a new or unexpected way or is for any particular purpose which is unobvious to one of ordinary skill in the art .

8. Claims 1-18, 20, 22, 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandvold (U.S.Pat. 3,584,850) in view of Baukal, Jr. et al. (U. S. Pat. 5,413,476).

Brandvold shows a mineral lime (CaO) processing inclined rotary kiln 12 with a lower combustion air end 14b and an upper material feed end 14a, 18, 20d. An air inlet opening 24e is located between two ends. A preheater or calcining assembly 38, 40 (incoming mineral passes inlet chute 20d and is directly preheated by the exiting hot flue gas 44 in vessel 38) is positioned proximate to the upper end 18. The preheating or calcining assembly has a stationary vessel 38, 40 through which the mineral passes prior to advancement into the rotary vessel. The kiln existing hot flue gas stream passes in contact with the mineral subsequent to advancement out of the rotary vessel. A stationary hood 14k is positioned proximate to the

combustion air inlet lower end 14b and a burner 16a is proximate to the combustion air inlet lower end 14b. Baukal illustrated the importance and the desire to have two stage combustion, e.g. sub-stoichiometric and supper-stoichiometric combustion in order to maximize the efficiency fuel efficiency and reduce pollutants. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to operate kiln of Branvold with the combustion rate at sub-stoichmetric ratio at the lower end and super-stoichmetric at the upper end as taught by Baukal in order to obtain a complete combustion for clean air exhaust. This is well known practice in the combustion art. With regard to claimed numerical ranges of the combustion air mass flow rate, it would have been an obvious matter of design choice to supply the combustion air at any desired mass flow rate in order to obtain the optimum result since applicant has not disclosed that the claimed combustion air mass flow rate range solves any stated problem in a new or unexpected way or is for any particular purpose which is unobvious to one of ordinary skill in the art .

9. Claims 1-29 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tutt et al (U. S. Pat. 5,375,535) in view of Baukal, Jr. et al. (U. S. Pat. 5,413,476).

Tutt shows a mineral lime (CaO) processing inclined rotary kiln 16, 24 with a lower combustion air end 30 and an upper material feed end 12, 20. An air inlet opening 56-60 is located between two ends. A preheater or precalcining assembly (at 20, 22) is positioned at the upper end 24. A stationary hood 32 is positioned proximate to the combustion air inlet lower end 36 and a burner 33 is proximate to the combustion air inlet lower end 36. Baukal illustrated the importance and the desire to have two stage combustion, e.g. sub-stoichiometric and supper-stoichiometric combustion in order to maximize the efficiency fuel efficiency and reduce

pollutants. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to operate kiln of Tutt et al. with the combustion rate at sub-stoichiometric ratio at the lower end and super-stoichiometric at the upper end as taught by Baukal in order to obtain a complete combustion for clean air exhaust. This is well known practice in the combustion art. With regard to claimed numerical ranges of the combustion air mass flow rate, it would have been an obvious matter of design choice to supply the combustion air at any desired mass flow rate in order to obtain the optimum result since applicant has not disclosed that the claimed combustion air mass flow rate range solves any stated problem in a new or unexpected way or is for any particular purpose which is unobvious to one of ordinary skill in the art .

### ***Double Patenting***

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1-29 and 31-34 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-52 of U.S. Patent No. 6,672,865. Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of patent claims 1-52 cover the currently presented broad claims 1-29, 31-34.

For example, current broad claim 1 is met by the patent claims 40, and 42. The sub-stoichiometric combustion will occur when the combustion air is controlled under 10% as claimed in patent claims 1- 42. As for another example, current broad claim 3 is met by the patent claim 47. The sub-stoichiometric combustion will occur when the combustion air is controlled under 7% as claimed in patent claim 47.

***Response to Arguments***

12. Applicant's arguments filed 5/9/2005 have been fully considered but they are not persuasive to overcome the rejection. First, broad claims presented fail to structurally define over the prior art references. The examiner requests the applicant to point out from the claims exactly which element that the references do not show or teach. Each and every element claimed is merely a well known feature in the combustion art. Second, the applicant argues that the examiner has taken an unreasonable interpretation. The examiner disagrees because the applicant always has the right to amend the claims to structurally define over the prior art references. Moreover, the term regarding "preheating/precalciner assembly" is well known in the art. The claimed "preheating/precalciner assembly" is nothing but a cyclone separator and a separate calciner connected in series as shown in the current application as Figs. 17-20. The applicant is invited to add these structural features in the claims rather than rely on the broad claim language "preheating/precalciner assembly". In view of the broad claims presented, the examiner must give each word in the claims with its broadest reasonable interpretation which is consistent to the specification. Third, the applicant argues that the additional air 24e supplied in Branvold patent is for "cooling" and nowhere does the patent explain the air deficient and

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excessive two stage combustion process. The examiner also disagrees on this line of reasoning.

First, the “cooling air” supplied 24e in Branvold also inherently becomes the secondary air for two-stage combustion purposes. One can not deny this point. Second, the two stage combustion process in the heating art is well known in the art as stated in the rejection above. The gist of the invention, if any, is shown in claim 1. Claim 1 merely calls for two stage combustion, namely, 1<sup>st</sup> air deficient stage and air excess (2<sup>nd</sup> stage implied) combustion. The examiner is not convinced and claims are rejected accordingly. Fourth, the applicant argues that claim 19 was not explained by the examiner. Claim 19 was and still is clearly anticipated by Branvold. The mineral material is advanced by gravity from upper end to lower end of rotary kiln. First combustion air with fuel is supplied in burner 16a and region 14k. Again this is a common practice that the heated exhaust air from cooler 30 is used as combustion primary air for the rotary kiln burner 16a. The secondary combustion air or cooling air is supplied through an opening 24a in the wall of the rotary kiln in Branvold. Each and every claimed element is shown by the Brandvold patent. Fifth, with regard to claimed numerical ranges, as long as the applicant is willing to show their criticality and unexpected results over the prior art references by test report and data, then, the examiner would allow the claims with limitations include numerical ranges.

### *Conclusion*

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jiping Lu whose telephone number is 571 272 4878. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira Lazarus can be reached on 571 272-4877. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jiping Lu  
Primary Examiner  
Art Unit 3749

J. L.  
